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EXAMINER

KHATIB, RAMI

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/590,003	Applicant(s) TARASINSKI ET AL.	
	Examiner RAMI KHATIB	Art Unit 3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14, 16-35 and 38-49 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14, 16-35 and 38-49 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to amendments and arguments received on 12/21/2011. Claims 1-14, 16-35, 38-49 have been amended. Claims 15, 36-37, and 50-51 have been cancelled, and No Claims have been added.

Claims 1-14, 16-35, 38-49 are now pending.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Lilley et al US 2002/0109357 A1 (hence Lilley'357).

4. In re claim 1, Lilley'357 discloses the claimed invention including the following:

- a drive system for a vehicle, with a first and a second drive module (Fig.2, and #10a, and #10b), a first and a second branch (Fig.2, #10sa and #10sb), at least one controller (the presence of a controller is inherent in the hybrid electric vehicle system), and at least one output interface (Fig.2, "output"), wherein the first drive module is connected to the first branch, wherein the second drive module is connected to the second branch (Fig.2, #10a, #10b, #10sa and #10sb), wherein at least one of the first branch and the second branch is connected to the output interface (Fig.1, and Paragraph 0031), and

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- wherein the drive modules are controlled with at least one controller, such that the drive modules output a given power continuously and independently of each other (Fig.2, and Paragraph 0029)
5. In re claim 2, Lilley'357 teaches the following:
 - one drive module has an internal combustion engine, especially a diesel engine (Fig.2, #20 and Paragraph 0031)
 6. In re claim 3, Lilley'357 teaches the following:
 - one drive module has an energy source generating electric current and a mechanical conversion stage (Fig.2, #22, and #24)
 7. In re claim 4, Lilley'357 teaches the following:
 - one input interface and at least one converter module is provided, wherein the input interface can be connected to an energy source wherein energy generated by the energy source can be distributed via the input interface to the first and to the second branch, wherein the converter module is connected to at least one drive module, and wherein the converter module can be connected to the input interface (Paragraph 0029 and Fig.2)
 8. In re claim 5, Lilley'357 teaches the following:
 - energy can be distributed or transported arbitrarily between the converter module and at least one drive module (Paragraph 0029 and Fig.2)
 9. In re claim 6, Lilley'357 teaches the following:
 - the energy source generates mechanical and/or electrical energy (Fig.1, #20)
 10. In re claim 7, Lilley'357 teaches the following:

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- a controller is provided, which controls the energy source, whereby preferably the energy generated by the energy source is variable (Paragraph 0024, conventional mechanical mode, and Paragraph 0027, “when the vehicle is accelerated to a predetermined speed”)
11. In re claim 8, Lilley’357 teaches the following:
- the energy source includes an internal combustion engine, especially a diesel engine, a generator driven by an internal combustion engine, a fuel cell, and/or an electrical storage (Paragraphs 0030-0031)
12. In re claim 9, Lilley’357 teaches the following:
- another output interface is provided, which can be connected reversibly to one of the two branches, preferably to the second branch (Paragraph 0018, “The output of this system is in the form of a shaft that can be adapted to drive various loads”)
13. In re claim 10, Lilley’357 teaches the following:
- mechanical and/or electrical energy can be transmitted via the input interface the output interface, and/or the other output interface (Paragraph 0019 “torque”)
14. In re claim 11, Lilley’357 teaches the following:
- a shaft is provided for transmitting mechanical energy (Fig.1, #20s)
15. In re claim 12, Lilley’357 teaches the following:
- the first and/or the second branch and/or the output interface each has at least one mechanical gear stage, with which preferably a rotational speed

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reduction and/or a rotational speed reversal can be achieved (Paragraph 0022)

16. In re claim 13, Lilley'357 teaches the following:

- the mechanical gear stage has at least one spur gear stage and/or a planetary gear unit (Paragraph 0004)

17. In re claim 14, Lilley'357 teaches the following:

- a reversible connection between an output interface and a branch can be established with the aid of a positive-fit coupling (Fig.1, #40, #41, #42, and #43)

Claim Rejections - 35 USC § 103

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

19. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

20. Claims 16-35, and 38-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lilley'357 in view of Hirt et al US 2002/0082134 A1 (hence Hirt'134).

21. In re claim 16, Lilley'357 discloses the structural elements of the claimed invention but fails to teach the following:

- the positive-fit coupling works according to the principle of a claw coupling

22. Nevertheless, Hirt'134 discloses a Transmission with an electro-mechanical energy converter and teaches the following:

- the positive-fit coupling works according to the principle of a claw coupling (Paragraph 0107)

23. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Lilley'357 reference with the friction locking clutches, as taught by Hirt'134 in order to optimize the efficiency of the transmission by using form-locking clutches that can be configured in various different ways including the principle of claw coupling (Hirt'134, Paragraphs 0106).

All the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time the invention was made.

24. In re claim 17, Lilley'357 teaches the following:

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- a converter module receives mechanical and/or electrical energy (Fig.2, #20 and #24)
25. In re claim 18, Lilley'357 teaches the following:
- a drive module outputs mechanical and/or electrical energy (Fig.1, #10 "a reversible electric motor")
26. In re claim 19, Lilley'357 teaches the following:
- a conversion between electrical and mechanical energy is performed with the converter module and the drive modules (Paragraphs 0029 and 0031)
27. In re claim 20, Lilley'357 teaches the following:
- the converter module has at least one electric machine that can be operated as a generator (Fig.2, #22)
28. In re claim 21, Lilley'357 teaches the following:
- the first and the second drive module each has an electric machine that can be operated as a motor (Fig.2, #10a, and 10b, "a reversible electric motor")
29. In re claim 22, Hirt'134 teaches the following:
- a conversion between hydraulic and mechanical energy is performed with the converter module and the drive modules (Paragraph 0010)
30. In re claim 23, Hirt'134 teaches the following:
- wherein the converter module has at least one mechanically driven, preferably adjustable, hydropump (Paragraph 0010)
31. In re claim 24, Hirt'134 teaches the following:

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- the first and the second drive module each has a preferably adjustable hydromotor (Paragraphs 0019 and 0020)
32. In re claim 25, Hirt'134 teaches the following:
- mechanical energy can be converted with the converter module and the drive modules (Paragraph 0011)
33. In re claim 26, Hirt'134 teaches the following:
- the converter module has an input shaft of a belt gear, a friction gear, or a chain converter (Paragraph 0006)
34. In re claim 27, Hirt'134 teaches the following:
- the first and the second drive module each has at least one output shaft of the corresponding gear (Paragraph 0091)
35. In re claim 28, Hirt'134 teaches the following:
- the input interface is mechanically coupled to the first and the second branch (Fig.1, #10)
36. In re claim 29, Hirt'134 teaches the following:
- the converter module is allocated to the energy source or has an electric machine driven by the energy source and operating as a generator (Paragraph 0032)
37. In re claim 30, Hirt'134 teaches the following:
- the first and the second drive module each has an electric machine operating as a motor (Paragraph 0007)
38. In re claim 31, Hirt'134 teaches the following:

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- the input interface is electrically or hydraulically coupled to one of the two branches and the input interface is mechanically coupled to the other of the two branches (Fig.1, and at least Paragraphs 0011 and 0091)
39. In re claim 32, Lilley'357 teaches the following:
- the converter module has an electric machine driven mechanically by the energy source and operating as a generator (Fig.2)
40. In re claim 33, Hirt'134 teaches the following:
- the first branch can be driven mechanically with the first drive module (Fig.1, #101)
41. In re claim 34, Hirt'134 teaches the following:
- the second drive module can be connected to the second branch or has a power-diverted arrangement to this branch, preferably via a planetary gear (Fig.1, #100)
42. In re claim 35, Hirt'134 teaches the following:
- a brake, preferably a friction brake, with which at least one part of the second branch can be stopped relative to a housing of the drive system, is provided in the second branch (Fig.3, #207)
43. In re claim 38, Hirt'134 teaches the following:
- the first drive module is arranged spatially downstream of the converter module with reference to the input interface and Wherein preferably the first drive module is arranged downstream of the second drive module with reference to the input interface (Fig.1)

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44. In re claim 39, Hirt'134 teaches the following:
- of the converter module and/or the drive modules, at least two modules are arranged essentially coaxial to each other (Fig.1)
45. In re claim 40, Hirt'134 teaches the following:
- wherein the first branch and the second branch can each be connected reversibly to the output interface via a shiftable multi-step transmission (Paragraph 0005)
46. In re claim 41, Hirt'134 teaches the following:
- the second branch can be connected reversibly to the other output interface via a shiftable multi-step transmission (Paragraph 0005, "countershaft")
47. In re claim 42, Hirt'134 teaches the following:
- at least two different transmission ratios can be realized with the shiftable multi-step transmission (Paragraph 0007)
48. In re claim 43, Hirt'134 teaches the following:
- the output interface can be connected to a traction drive and/or that the other output interface can be connected to a power take-off (Paragraph 0005)
49. In re claim 44, Hirt'134 teaches the following:
- it is possible to shift between the two branches under loading (Paragraph 0090)
50. In re claim 45, Hirt'134 teaches the following:
- at least one sensor is provided, with which the operating state of at least one component of the drive system can be detected and can be fed to the

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controller, so that preferably the possible shift states of the drive system can be detected redundantly (Paragraphs 0087, and 0121)

51. In re claim 46, Hirt'134 teaches the following:

- in a first shift state, the first branch is connected to the output interface and wherein the first drive module is connected to the first branch (Fig.20, and Paragraphs 0157+)

52. In re claim 47, Hirt'134 teaches the following:

- the second branch is connected to the other output interface and wherein the second drive module is connected to the second branch (Fig.1, in a case of a countershaft)

53. In re claim 48, Hirt'134 teaches the following:

- in a second shift state, the first and the second branch are connected to the output interface and wherein preferably the rotational speeds of the two drive modules are tuned or synchronized to the rotational speed of the output interface (Fig. 24, and Paragraphs 0007, 0083, 0165)

54. In re claim 49, Hirt'134 teaches the following:

- in a third shift state, the second branch is connected to the output interface and that preferably the second branch is connected to the other output interface (Fig.34, and Paragraph 0177)

Response to Arguments

55. Applicant's arguments filed 12/21/2011 have been fully considered but they are not persuasive.

56. With respect to applicant arguments with respect to claim 1 that Lilley doesn't teach or suggest that the drive modules output a given power continuously and independently of each other, the examiner respectfully disagrees with that statement. Fig.1 of Lilley refers to the use of a constant power source 20, and a single variable power source 10, and Lilley further expands in Paragraph 0029 that the collection transmission can be employed with one or more variable power sources 10, as shown in Fig.2, therefore the usage of one variable power source 10 can be accomplished independently of the second power source.

Conclusion

57. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RAMI KHATIB whose telephone number is (571)270-1165. The examiner can normally be reached on Monday-Friday/8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/R. K./
Examiner, Art Unit 3663

/JACK W KEITH/
Supervisory Patent Examiner, Art Unit 3663